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10/783,034

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Rudy Jan Maria Pellens

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EXAMINER

QUINTO, KEVIN V

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/783,034	Applicant(s) PELLENS, RUDY JAN MARIA	
	Examiner Kevin Quinto	Art Unit 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7, 8, 10-13, 16-21 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7, 8, 13 and 16-19 is/are allowed.
- 6) ☒ Claim(s) 1-5, 10-12, 20, 21 and 23-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-5, 10-12, 20, 21, and 23-25 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 10-12, 20, 21, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (USPN 6,943,068 B2).
4. In reference to claim 1, Chang et al. (USPN 6,943,068 B2, hereinafter referred to as the "Chang" reference) discloses a device manufacturing method which meets the claim. Figures 1(a)-1(d) of Chang illustrate a substrate (1) with a first layer of electromagnetic radiation sensitive material (2) provided on it. A second layer of electromagnetic radiation sensitive material (3) is provided on the first layer of radiation sensitive material (2). The first (2) and second (3) layers of electromagnetic radiation sensitive material have a same tonality. The first layer of radiation sensitive material (2), made of PMMA, is different from the second layer of radiation sensitive material (3) since it is made of P(MMA-MAA). Figure 1(b) shows that a beam of electromagnetic

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radiation is provided using an illumination system. The beam of radiation is imparted with a desired pattern in its cross-section by employing a patterning device and projected onto a target portion of the substrate (1) to expose both the first (2) and second (3) layers of radiation sensitive material. The second layer (3) of electromagnetic radiation sensitive material is selected such that after developing the second layer (3), a side portion of the developed second layer (3) defines a negative slope with respect to a direction substantially perpendicular to a surface of the substrate (1). Chang does not explicitly state that the first layer of radiation sensitive material (2) has a dose size of at least approximately 1.5 times the magnitude of the dose size of the second layer of radiation sensitive material (3). However it is clear that the first layer of radiation sensitive material (2) has a dose size which is greater than that of the dose size of the second layer of radiation sensitive material (3) since the exposed portion of the second layer of radiation sensitive material (3) is greater than the exposed portion of the first layer of radiation sensitive material (2) after a single exposure step (see figure 1c). The examiner would like to note:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Therefore claim 1 is not patentable over the Chang reference.

5. With regard to claim 2, Chang does not explicitly state that the first layer of radiation sensitive material (2) has a dose size of at least approximately 1.5 times to 2.5 times the magnitude of the dose size of the second layer of radiation sensitive material (3). However it is clear that the first layer of radiation sensitive material (2) has a dose size which is greater than that of the dose size of the second layer of radiation sensitive

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material (3) since the exposed portion of the second layer of radiation sensitive material (3) is greater than the exposed portion of the first layer of radiation sensitive material (2) after a single exposure step (see figure 1(b)). The examiner would like to note:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Therefore claim 2 is not patentable over the Chang reference.

6. In reference to claim 3, the first layer (2) is thinner than the second layer (3).

7. With regard to claim 4, Chang does not disclose the exact thicknesses as that claimed by the applicant. However:

Note that the specification contains no disclosure of either the critical nature of the claimed dimensions or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Therefore this limitation is not patentable over Chang.

8. In reference to claim 5, the first and second materials are substantially immiscible.

9. With regard to claim 10, the first (2) and second (3) layers are positive radiation sensitive.

10. In reference to claim 11, the first (2) and second (3) layers are developed to remove portions which are exposed.

11. With regard to claim 12, the removed portion of the first layer (2) is smaller than the removed portion of the second layer (3).

12. With regard to claim 23, Chang discloses the use of GaAs as the substrate material (column 3, lines 50-51).

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13. In reference to claim 24, the method is a process for the manufacture of an integrated circuit having a T-gate.

14. In reference to claim 20, Chang (USPN 6,943,068 B2) discloses a structure which meets the claim. Figures 1a-1e of Chang illustrate a substrate (1) with a first layer of electromagnetic radiation sensitive material (2) attached to a substrate surface. A second layer of electromagnetic radiation sensitive material (3) is attached to the first layer of radiation sensitive material (2). The first (2) and second (3) layers of electromagnetic radiation sensitive material have a same tonality. The first layer of radiation sensitive material (2), made of PMMA, is different from the second layer of radiation sensitive material (3) since it is made of P(MMA-MAA). A side portion of the developed second layer (3) defines a negative slope with respect to a direction substantially perpendicular to a surface of the substrate (1). Chang does not explicitly state that the first layer of radiation sensitive material (2) has a dose size of at least approximately 1.5 times the magnitude of the dose size of the second layer of radiation sensitive material (3). However it is clear that the first layer of radiation sensitive material (2) has a dose size which is greater than that of the dose size of the second layer of radiation sensitive material (3) since the exposed portion of the second layer of radiation sensitive material (3) is greater than the exposed portion of the first layer of radiation sensitive material (2) after a single exposure step (see figure 1c). The examiner would like to note:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Therefore claim 20 is not patentable over the Chang reference.

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15. With regard to claim 21, Chang does not explicitly state that the first layer of radiation sensitive material (2) has a dose size of at least approximately 1.5 times to 2.5 times the magnitude of the dose size of the second layer of radiation sensitive material (3). However it is clear that the first layer of radiation sensitive material (2) has a dose size which is greater than that of the dose size of the second layer of radiation sensitive material (3) since the exposed portion of the second layer of radiation sensitive material (3) is greater than the exposed portion of the first layer of radiation sensitive material (2) after a single exposure step (see figure 3D). The examiner would like to note:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Therefore claim 21 is not patentable over the Chang reference.

16. With regard to claim 25, Chang discloses the use of GaAs as the substrate material (column 3, lines 50-51).

17. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (USPN 6,943,068 B2) in view of Ahmed et al. (United States Patent Application Publication No. US 2004/0056304 A1).

18. With regard to claim 23, Chang does not disclose the use of silicon, GaN, or InP as the substrate material. However Ahmed et al. (United States Patent Application Publication No. US 2004/0056304 A1, hereinafter referred to as the "Ahmed" reference) discloses that these materials are well known semiconductor substrate materials (p. 2, paragraph 27). The applicant is reminded in this regard that it has been held that a mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the

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intended use, would be entirely obvious. See *In re Leshin* 227 F.2d 197, 125 USPQ 416 (CCPA 1960) and also *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore claim 23 is not patentable over the Chang and Ahmed references.

19. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (USPN 6,943,068 B2) in view of Kazama et al. (United States Patent Application Publication No. US 2002/0034872 A1).

20. With regard to claim 23, Chang does not disclose the use of SiGa as the substrate material. However Kazama et al. (United States Patent Application Publication No. US 2002/0034872 A1, hereinafter referred to as the "Kazama" reference) discloses that this material is a well known semiconductor substrate material (p. 7, paragraph 103). The applicant is reminded in this regard that it has been held that a mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. See *In re Leshin* 227 F.2d 197, 125 USPQ 416 (CCPA 1960) and also *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore claim 23 is not patentable over the Chang and Kazama references.

21. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (USPN 6,943,068 B2) in view of Ahmed et al. (United States Patent Application Publication No. US 2004/0056304 A1).

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22. With regard to claim 25, Chang does not disclose the use of silicon, GaN, or InP as the substrate material. However Ahmed (United States Patent Application Publication No. US 2004/0056304 A1) discloses that these materials are well known semiconductor substrate materials (p. 2, paragraph 27). The applicant is reminded in this regard that it has been held that a mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. See *In re Leshin* 227 F.2d 197, 125 USPQ 416 (CCPA 1960) and also *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore claim 25 is not patentable over the Chang and Ahmed references.

23. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (USPN 6,943,068 B2) in view of Kazama et al. (United States Patent Application Publication No. US 2002/0034872 A1).

24. With regard to claim 25, Chang does not disclose the use of SiGa as the substrate material. However Kazama (United States Patent Application Publication No. US 2002/0034872 A1) discloses that this material is a well known semiconductor substrate material (p. 7, paragraph 103). The applicant is reminded in this regard that it has been held that a mere selection of known materials generally understood to be suitable to make a device, the selection of the particular material being on the basis of suitability for the intended use, would be entirely obvious. See *In re Leshin* 227 F.2d 197, 125 USPQ 416 (CCPA 1960) and also *Sinclair & Carroll Co. v. Interchemical*

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Corp., 325 U.S. 327, 65 USPQ 297 (1945). Therefore claim 25 is not patentable over the Chang and Kazama references.

Allowable Subject Matter

25. Claims 7, 8, 13, and 16-19 are allowed.

26. The following is a statement of reasons for the indication of allowable subject matter: the reasons for allowance were cited in the previous Office action.

Conclusion

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin Quinto/
Examiner, Art Unit 2826

/Evan Pert/
Primary Examiner, Art Unit 2826